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BOOK REVIEW

DESIGN OF SCIENCE ISOLATED STRUCTURES: FROM THEORY TO PRACTICE by Farzad Naeim and James Kelly. ISBN 0471-14921-7; Wiley, New York, 1999; Price: £51.95, US$79.95.

This text is a welcome addition to the small but growing library of books on earthquake protective systems. The authors cover, in a relatively small volume (less than 300 pages), a wide range of topics related to the seismic design of isolated structures. Despite the stated intent of being suitable for engineers and architects, the text emphasizes the engineering aspects of isolation and will be of principal value to structural engineers looking for an alternative to conventional seismic design. The work is a concise exposition of the theory and practice of seismic isolation and will be an extremely useful addition to the structural engineer's bookshelf.

The ten chapters begin with an overview of the history of isolation and its modern development, by reviewing early patents and recent applications of commonly used isolation systems. This is a worldwide survey and demonstrates the universal interest in the technology and the versatility of its application.

Chapter 2 lays out the theoretical basis of seismic isolation for linear, multi-degree-of-freedom systems. This rigorous treatment suffers (if that is the right word) from being too 'rigorous' and is perhaps out of context with the rest of the volume. Practicing engineers may find the content difficult to follow, but its existence will nevertheless reassure many that seismic isolation has a solid theoretical foundation.

A review of isolation hardware is made in Chapter 3 and, as noted by the authors, it is only an introduction to the expanding field of isolation hardware now available. Many of these systems are proprietary and vigorous competition exists amongst manufacturers. As a consequence, quality control and performance validation are important elements in the selection of this hardware. In this regard Chapter 10 gives useful advice together with a set of sample specifications.

Despite a decade, or more, of university-based research, adoption of isolation in the United States depended, in the final analysis, on the development and acceptance of design codes that explicitly provide for isolation. Chapter 4 reviews the UBC-97 provisions and is particularly useful for its commentary and explanation of the philosophy behind these provisions. This chapter will be of wide interest to designers for it gives useful insight into the design process and interpretation of the code's requirements.

Successful numerical modelling of an isolated building requires the careful representation of the mechanical properties and limit states of the isolators, the rational selection of the design ground motions, and validated software for the analysis itself. Chapters 5–7, and 9 address these issues in turn. Expert advice is given in the areas of isolator properties and ground motions based on the lengthy experience of both authors. A feature of the book is the inclusion of a CD-ROM, which contains an educational version of SAP-2000 for the analysis of non-linear systems. A user manual, earthquake time histories, and input files for the worked examples in the text are also provided. In addition, software is included for the optimum selection of isolators during design. This CD will be a particular asset, not only for the novice isolation engineer, but also for the expert looking for an authoritative bench mark by which to test, and perhaps improve, his or her own modelling techniques.

Finally, a design example is presented in Chapter 8, which illustrates many of the points made in earlier chapters. This may be the most instructive chapter to many readers for it reinforces the principles and procedures of isolation design.

It is hard to find fault with this book. The authors are acknowledged leaders in this field and their information and advice is authoritative. The

text fills a void in the published literature and will have a wide audience. What it lacks, perhaps, is advice to architects on such matters as detailing for the movement that occurs across the isolation interface. But inclusion of this material would have substantially increased the size of the work and shifted the focus away from the intended audience, despite words to the contrary in the Preface.

One final note: the text focuses on building applications and says little, if anything, about other structures, such as bridges. Since applications to bridges outnumber those to buildings, worldwide, perhaps the title of this book should have been *Design of Seismic Isolated Buildings?*

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BOOK RECEIVED

EARTHQUAKE GEOTECHNICAL ENGINEERING
Edited by P. Sêco e Pinto, three volumes (total number of pages = 1133), A. A. Balkema, Rotterdam, 1999.

Presented in this book are the Proceedings of the Second International Conference on Earthquake Geotechnical Engineering in Lisbon, Spain, 21–25 June 1999. Included are 124 papers from 24C countries organized along the following topics:

1. Dynamic characteristics of soils;
2. Strong motions and site amplifications;
3. Soil-structure interaction and retaining structures
4. Underground and buried structures;
5. Liquefaction;
6. Slopes and embankments;
7. Code, standards and safety evaluation; and
8. Recent earthquakes.

Volumes 1 and 2 contain papers submitted for the Discussion Sessions and for the Workshop. Volume 3 includes the Keynote lecture, the Theme lectures, the Discussion session reports, and the Panelist's contributions.